



AF-2832

Attorney Docket No. 0675-30

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Tsuneo KYOUNO et al.

Serial No. 09/601,319

Filed: October 23, 2000

For: ELECTROMAGNETIC ACTUATOR  
AND STRUCTURE FOR MOUNTING

THE SAME

) Group Art Unit: 2832

) Examiner: L. Donovan

) CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on

3-12-04

Rose D. [Signature]

**RESUBMISSION OF RESPONSE FILED FEBRUARY 19, 2004**

Honorable Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Applicant's representative received an *Advisory Action* dated March 9, 2004, indicating that the *Response* filed February 19, 2004 has not been considered in that the *Response* was unsigned by Applicant's representative. In response thereto, attached please find a signed copy of the *Response* filed February 19, 2004. It is respectfully requested that the Patent Office enter the attached *Response* and issue a further communication.

No further fees are due in that a *Notice of Appeal* was filed with the *Response* on February 19, 2004 and the fees associated with the filing of the *Notice of Appeal* was paid at that time.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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	)	<u>Rose J. [Signature]</u>

**RESPONSE**

Honorable Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The Official Action mailed August 19, 2003, has been received and its contents carefully noted. Filed concurrently herewith is a *Request for Three Month Extension of Time*, which extends the shortened statutory period for response to February 19, 2004. Accordingly, the Applicants respectfully submit that this response is being timely filed.

The Applicants note with appreciation the consideration of the Information Disclosure Statement filed on February 6, 2001. However, the Applicants have not received acknowledgment of the Information Disclosure Statement filed on November 15, 2002. The Applicants respectfully request that the Examiner provide an initialed copy of the Form PTO-1449 evidencing consideration of the above-referenced Information Disclosure Statement.

Claims 1, 2 and 4-14 are pending in the present application. Claims 2, 4, 5, 8 and 10-13 are independent, and claims 4-7 and 11-14 have been withdrawn from consideration. Accordingly, claims 1, 2 and 8-10 are currently elected, of which claims 1, 8 and 10 are independent. The Applicants note with appreciation the allowance of claims 8-10 (Office Action Summary and page 4, Paper No. 21, "Allowable Subject

Matter”). For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

Paragraph 2 of the Official Action rejects claims 1 and 2 as obvious based on the combination of U.S. Patent No. 5,528,697 to Saito, U.S. Patent No. 5,894,263 to Shimakawa et al., and U.S. Patent No. 5,546,469 to Donahoe. It appears that the Official Action has inadvertently indicated that claims 8-10 remain rejected (page 2, *Id.*); however, the previous rejection against claims 8-10 (Paper No. 18) has been deleted from the Official Action. Therefore, the Applicants respectfully submit that claims 1 and 2 stand rejected and that claims 8-10 are in condition for allowance. The Applicants respectfully traverse the rejection because the Official Action has not made a *prima facie* case of obviousness.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. “The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art.” *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). *See also In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

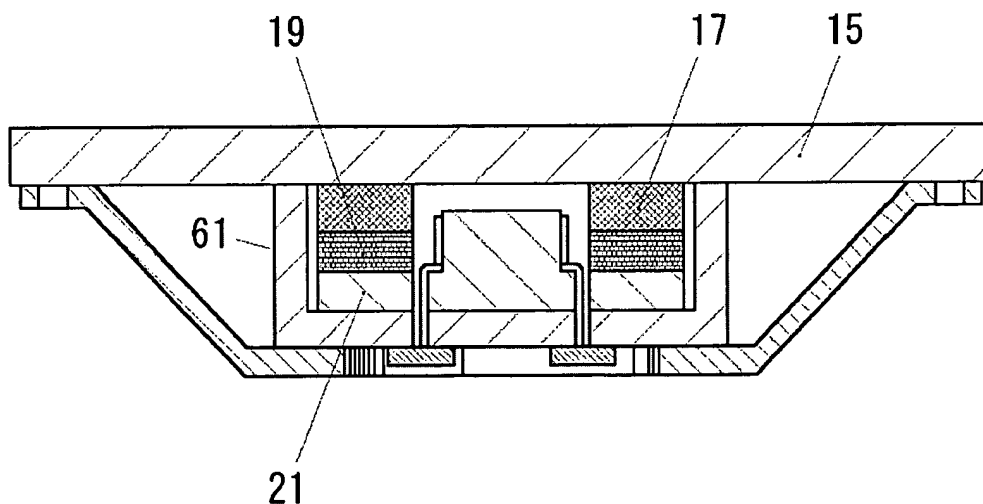
The prior art, either alone or in combination, does not teach or suggest all the features of the independent claims. Independent claim 1 recites an electromagnetic actuator having a coil on which current is applied, a magnet (e.g. 20) that forms a magnetic circuit (e.g. Exhibit 4 below) between its poles across a magnetic gap with a magnet yoke (e.g. 21), a diaphragm that vibrates by magnetic action when a high-frequency current is applied and a vibration plate that vibrates by magnetic action when a low-frequency current is applied, and that the magnet yoke is assembled with a spacer (e.g. 24) between the magnet yoke and the magnet. Saito, Shimakawa and Donahoe, either alone or in combination, do not teach or suggest at least the above-referenced features of the present invention.

The Official Action asserts that Saito teaches "yoke portions [26, 29] defining a gap between poles thereof [figure 5]" and "a radially arranged magnet [28] mounted, and suspended, between the vibration plates having its north and south poles parallel to the vibration plates and diaphragm" (page 2, Paper No. 21). The Official Action concedes that Saito does not disclose "a spacer between the magnet and the yoke" (page 3, Id.). Further, Shimakawa does not appear to teach or suggest a spacer between a magnet yoke and a magnet. The Official Action asserts that Donahoe discloses "a sound transducer including a magnet member [17] spaced from a yoke [61] with a spacer [19]" (page 4, Id.). However, Saito, Shimakawa and Donahoe, either alone or in combination, do not teach or suggest a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is applied and a vibration plate that vibrates by magnetic action when a low-frequency current is applied, and that the magnet yoke is assembled with a spacer between the magnet yoke and the magnet.

As described in detail below, adding or incorporating the resilient and highly flexible spacer 19 of Donahoe into the combined device of Saito and Shimakawa would disable the resulting device. In other words, if one were somehow motivated to incorporate the resilient and highly flexible spacer 19 of Donahoe into the combined

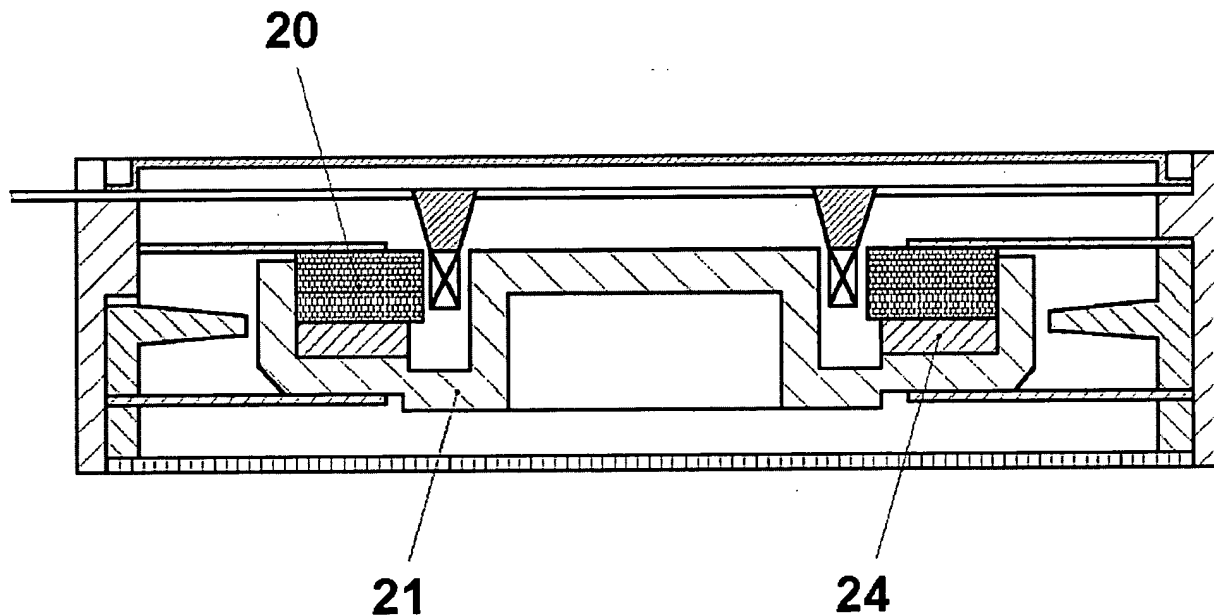
device of Saito and Shimakawa, the resulting device would no longer function such that a diaphragm vibrates by magnetic action when a high-frequency current is applied and a vibration plate vibrates by magnetic action when a low-frequency current is applied (hereinafter "high-frequency, low-frequency manner"). A flexible spacer cannot be used in the proposed combined device of Saito and Shimakawa in order to function as noted above, which is claimed by independent claim 1. Therefore, Saito, Shimakawa and Donahoe do not teach or suggest a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, which functions in a high-frequency, low-frequency manner, and that the magnet yoke is assembled with a spacer between the magnet yoke and the magnet.

Specifically, the Applicants note that spacer 19 of Donahoe "is constructed of a material that is both resilient and highly flexible; such as foam rubber or solid elastomeric rubber" (column 2, lines 53-55). The spacer 19 is placed between the magnet 17 and yoke 21, thus the spacer 19 elastically suspends the part that supports the magnet 17 such that vertical vibration of the magnet 17 occurs against the wall 15 (see Exhibit 1 below). As such, Donahoe is not adapted to function in the same high-frequency, low-frequency manner as the present invention.



**Exhibit 1: FIG. 2 of Donahoe showing wall 15, permanent magnet 17, flexible spacer 19, yoke 21 and frame side 61**

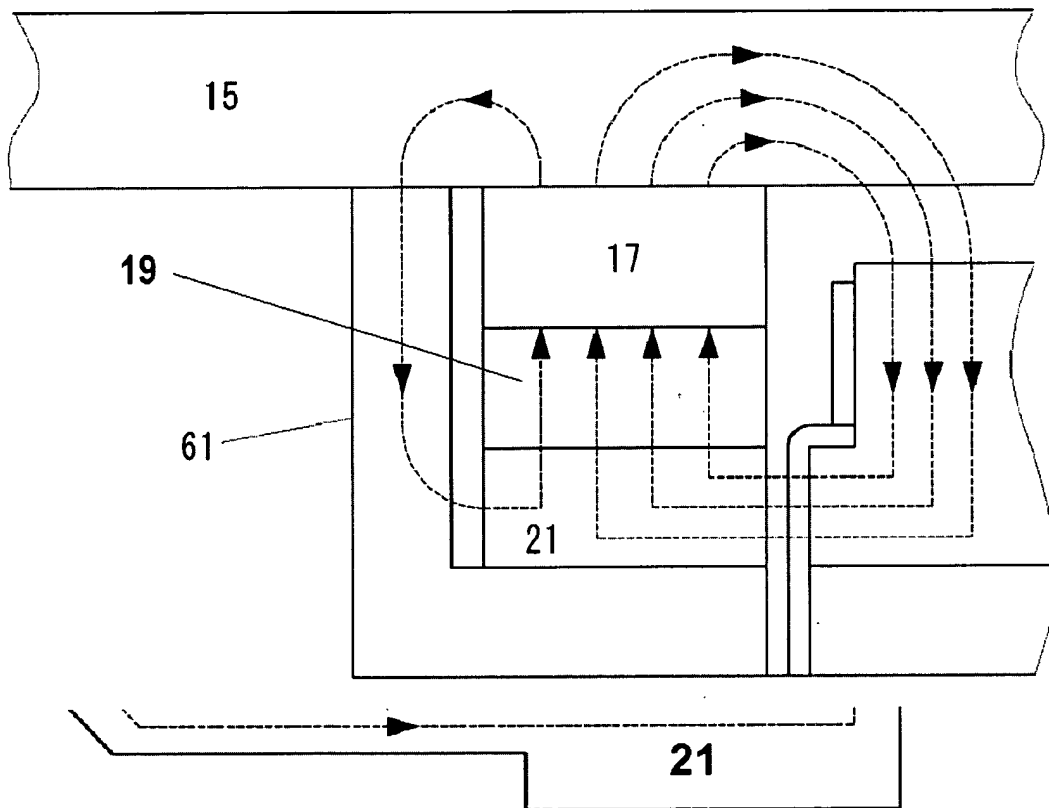
On the other hand, spacer 24 of the present invention does not hold a permanent magnet 20 against an object, e.g. a wall. Rather, the spacer 24 of the present invention is adapted to function in the high-frequency, low-frequency manner described above and in independent claim 1. In the present invention, the arrangement of the spacer 24 between a magnet 20 and magnet yoke 21 are to eliminate the possibility that the magnet 20 slips down inside the magnet yoke 21 and in order to form a stable magnetic circuit even if the magnetic circuit (that is made up of magnet yoke 21, magnet 20 and spacer 24) vibrates by magnetic action. Thus, in the present invention, a comparatively hard material may be used. The spacer 24 of the present invention differs from the spacer 19 of Donahoe, because the spacer 24 of the present invention supports the magnet 20 firmly and permits high-frequency, low-frequency operation (see Exhibit 2 below).



**Exhibit 2: FIG. 1 of the Present Invention showing magnet 20, magnet yoke 21, spacer 24**

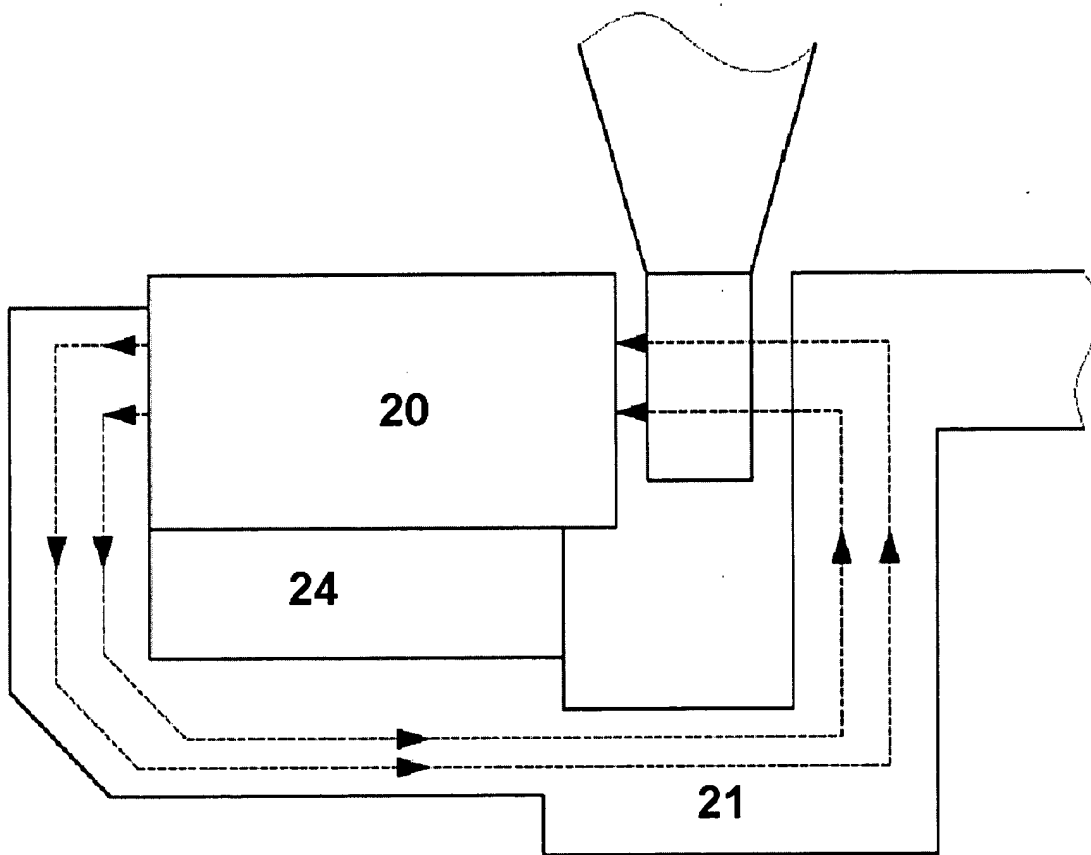
The wall 15 of Donahoe is not necessarily made from magnetic materials; therefore, the magnet 17 is not necessarily enclosed with magnetic materials. It

appears that the magnetic circuit of Donahoe is an open type magnetic circuit. The Applicants respectfully submit that magnetic lines of force that are emitted from the N-pole of the magnet 17 of Donahoe pass through non-magnetic wall 15 while the magnetic lines of force that are emitted from the N-pole of the magnet 17 return to the S pole of the magnet 17. Also, side frame 61 appears to be made of non-magnetic material, which also does not affect the movement of the magnet 17. Furthermore, it appears that the upper side of the magnet is magnetized as an N-pole and that the lower side of the magnet 17 is magnetized as an S-pole and cannot function in the claimed high-frequency, low-frequency manner (see Exhibit 3 below).



**Exhibit 3: Expanded View of FIG. 2 of Donahoe showing wall 15, permanent magnet 17, flexible spacer 19, yoke 21 and frame side 61**

On the other hand, in the present invention, as the center of (magnetic) magnet yoke 21 is raised, the magnetic circuit of claims 1 and 2 is formed. Therefore, the magnetic lines of force pass through the magnet yoke 21 while the magnetic lines of force that are emitted from the N-pole of magnet 20 returns in the S-pole of magnet 20 once again. The distribution state of the magnetic lines of force of magnet 20 is shown below in Exhibit 4.



**Exhibit 4: Expanded View of FIG. 1 of the Present Invention showing a magnet 20 that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke 21 (and spacer 24)**

For the reasons stated above, the Applicants respectfully submit that Saito, Shimakawa and Donahoe do not teach or suggest a magnet that forms a magnetic



circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is applied and a vibration plate that vibrates by magnetic action when a low-frequency current is applied, and that the magnet yoke is assembled with a spacer between the magnet yoke and the magnet. Since Saito, Shimakawa and Donahoe do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained.

Furthermore, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Saito, Shimakawa and Donahoe or to combine reference teachings to achieve the claimed invention. The Official Action asserts that it would have been obvious "to one having ordinary skill in the art at the time the invention was made to include a spacer in Saito, as modified, for the purpose of accommodating expansion" (page 4, Paper No. 21). The Applicants respectfully disagree and traverse the above assertions in the Official Action.

As noted above, if one were to incorporate the spacer of Donahoe into Saito, Saito would no longer function such that a diaphragm vibrates by magnetic action when a high-frequency current is applied and a vibration plate vibrates by magnetic action when a low-frequency current is applied. Nothing in the prior art teaches or suggests why one of ordinary skill in the art would be motivated to insert the resilient and highly flexible spacer 19 of Donahoe in between the magnet 28 and yoke 29 of Saito or in between the magnet 19 and yoke 18 of Shimakawa.

Even assuming motivation could be found, the Official Action has not given any indication that one with ordinary skill in the art at the time of the invention would have had a reasonable expectation of success when combining Saito, Shimakawa and Donahoe. Nothing in the prior art teaches or suggests that the flexible spacer of Donahoe could function in the specific manner disclosed in independent claim 1.

The Applicants further contend that even assuming, *arguendo*, that the combination of Saito, Shimakawa and Donahoe is proper, there is a lack of suggestion


as to why a skilled artisan would use the proposed modifications to achieve the unobvious advantages first recognized by the Applicants. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.

In the present application, it is respectfully submitted that the prior art of record, alone or in combination, does not expressly or impliedly suggest the claimed invention and the Official Action has not presented a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

For the reasons stated above, the Official Action has not formed a proper *prima facie* case of obviousness. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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